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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,873	10/26/2000	Lawrence E. Albertelli	FS-00496	2974

30743 7590 08/16/2004

WHITHAM, CURTIS & CHRISTOFFERSON, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER

NATNAEL, PAULOS M

ART UNIT	PAPER NUMBER
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2614

DATE MAILED: 08/16/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/695,873

Applicant(s)

ALBERTELLI, LAWRENCE E.

Examiner

Paulos M. Natnael

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3, 5-12 is/are rejected.
7) ☒ Claim(s) 4 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on May 10, 2004, PROSECUTION IS HEREBY REOPENED. A new ground for rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Response to Arguments

2. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

3. The amendment of January 26, 2004 had already been entered by the time of the Advisory action of 2/25/04 was mailed; no new issue was raised by the Examiner about the amendment. Furthermore, the response in the advisory specifically addressed issued raised by Applicant in the remarks of amendment of January 26, 2004. For example, the examiner responded to the following two

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specific issues: 1) "First of all, the applicant mentions the Hibbs reference and a "Starikov" reference interchangeably. In the Hibbs et al., there is a Starikov reference U.S. Patent No. 5,276,337. However, this reference was not relied upon. The applied references are Hibbs et al., Sussmeier, and Harshburger. 2) Secondly, The applicant's representative writes [bridging pages 6 and 7] that "any evaluation or interpretation of the references which the Examiner may be making (and which is not at all clear from the statements of any of the various grounds of rejection) necessarily relies on inconsistency of the evaluation or interpretation made by the Examiner of the references applied. However, the Applicant's representative fails to point out the purported "inconsistency" and merely repeated the arguments from previous response."

Therefore, the examiner has addressed fully the status of the amendment and issues raised in the amendment of January 26, 2004.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Davis, U.S. Pat. No. 5,454,048.

Considering claim 1, Davis discloses the following claimed subject matter, note;

a) the claimed imaging a target including a plurality of sub-fields, respective sub-fields of said plurality of sub fields providing a progression of image feature size and pitch encompassing the spatial resolution of said imaging system, to produce a captured image, is met by Fig. 9, which shows on top of the target from left to right a plurality of sub-fields with a progression of image feature, size, and pitch.

b) inspecting said captured image for presence or absence of Moiré, patterns in sub-fields of said captured image, is met by the disclosure "...If an observer were to place his eye at one of the detectors, he would perceive the original image as though it were being modulated by a two-dimensional Walsh mask, even though this mask does not exist. This virtual two-dimensional mask is simply a Moire pattern produced by the two-sided reimaging of the simpler basis masks.." (col. 8, lines 34-40)

c) determining resolution of said imaging system from feature size and pitch in respective sub-fields inspected in said inspecting step;

Regarding c), see rejection of b). (see also col. 9, line 43 to col. 10, line 8, where spatial resolution is discussed)

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Considering claim 2, determining step determines resolution from a sub field pattern having a minimum of Moiré fringes.

Regarding claim 2, see rejection of claim 1(c).

Considering claim 3, a method as recited in claim 1 wherein said determining step determines resolution from a sub field imaged as uniform gray sub field.

Regarding claim 3, see rejection of claim 1(c).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, U.S. Pat. No. 5,454,048.

Considering claim 5, a method as recited in claim 1 including the further step of printing said target on a printer connected to a computer ;

Regarding claim 5, Davis discloses a computer and display device, but not a printer. However, the Examiner takes official notice in that it is notoriously well known in the art to print an image, and therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the system of

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Davis by providing a printer to the computer so that the user has the choice of printer hard copy of the image pattern.

8. Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hibbs, U.S. Pat. No. 5,508,803.

Considering claim 6, a target for determining resolution of an imaging system by inspecting an image of said target for Moiré' fringes in respective sub-fields of an image of said target, said target including

a) a plurality of sub-fields, respective sub-fields including a plurality of features, said plurality of features of respective sub-fields of said plurality of sub-fields having a progression of image feature size and pitch, is met by Fig.1, which shows a progression of size and pitch from left to right up to the center 16 field, the line 12 being smaller in size;

Except for;

b) encompassing the spatial resolution of said imaging system, referred to an object plane of said imaging system;

Regarding b), Hibbs discloses on col. 5, lines 37-39 and col. 6, lines 26-34 that "The pitch is chosen in the Starikov exposure monitor to be below the resolution of a lithographic exposure tool used therewith, so the lines appear to blur upon imaging. The line-to-space ratio varies across exposure monitor 10, so that the net effect is that of a single, broad, diffuse line with linearly varying optical intensity on each side of the center 16...As the resolution of the exposure

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tool improves, the line size needed within exposure monitor 10 becomes smaller, straining the ability of the mask fabrication tool to faithfully create the exposure monitor and the ability of the pattern verifier to verify the lines in the exposure monitor. Hibbs also discloses spatial resolution as indicated in the above quoted passage and as illustrated clearly on fig.2, which is a preferred exposure monitor (and an improvement over Fig.1).

Therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the system of Hibbs by providing the spatial resolution of fig.2 in exposure monitor of fig.1 in order for the line-to-space ratio to vary according to desire

Considering claim 7, a target as recited in claim 6, wherein said features include lines and spaces is met by the lines and spaces in Fig. 2;

9. Claims 8-12 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Hibbs, U.S. Pat. No. 5,917,987. in view of Davis, U.S. Pat. No. 5,454,048.

Considering claim 8, further including indicia indicating a resolution corresponding to feature size of features in a sub field;

Regarding claim 8, Hibbs does not specifically disclose indicia to indicate resolution. However, it is well known in the art to use numerical units on the screen or target image to indicate the value or range of a parameter.

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In that regard, Davis, for example, discloses an apparatus for multiplexed imaging and illustrates in figure 3 numerical units on the target image to indicate or differentiate the fields from each other for the imaging device.

Therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the system of Hibbs by adding numerical units or indicia within the target image to numerically indicate its resolution corresponding to preferred range of resolution values in order to make the inspection easier for an operator who would then quickly compare and determine the resolution of a given target image by inspecting the numerical values therein.

Considering claim 9, including indicia indicating a resolution corresponding to pitch of features in a sub field.

Regarding claims 9, see rejection of claim 8;

Considering claim 10 and 11, wherein said indicia is a human readable number;

Regarding claims 10 and 11, see rejection of claim 8.

Considering claim 12, including reference numbers corresponding to resolution of said imaging system and a further indicia.

Regarding claims 12, see rejection of claim 8.

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Allowable Subject Matter

10. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose determining alignment of said imaging system from Moiré' fringe angle in sub-fields inspected, as in claim 4;

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
August 6, 2004



PAULOS M. NATNAEL
PATENT EXAMINER